

**In the Claims**

1           1. (Currently Amended) A method of cooling a low Z target material of a neutron source  
2 assembly, comprising ~~the step of~~:  
3           providing, through by using a nozzle, a concentrated flow of~~circulating~~ liquid gallium  
4 ~~past in a direction normal to a non-bombarded surface of the low Z~~ target material to cool the  
5 low Z target material.

1           2. (Currently Amended) The method of claim 1, wherein said step of circulating  
2 comprises ~~the steps of~~:  
3           providing a reservoir of liquid gallium; and  
4           pumping the liquid gallium from the reservoir, through the nozzle, to the low Z target  
5 material to cool the target material and through a heat exchanger to remove heat from the liquid  
6 gallium.

1           **Claim 3 (Cancelled)**

1           4. (Original) The method of claim 2, wherein the target material comprises beryllium.

1           5. (Currently Amended) A neutron source assembly having a liquid cooled target,  
2 comprising:

3           ~~an accelerator based neutron source including modulator/reflector assembly that includes~~  
4 a low Z target material that is bombarded by accelerated particles to produce a neutron flux; and  
5           a cooling system ~~that~~ to circulates liquid gallium through said ~~modulator/reflector~~  
6 accelerator based neutron source to cool the low Z target material;  
7           said cooling system including a nozzle to provide a concentrated flow of liquid gallium in  
8 a direction normal to a non-bombarded surface of the target material.

1           6. (Currently Amended) The neutron source assembly of claim 5, wherein said cooling  
2 system comprises:  
3           a reservoir of liquid gallium;  
4           a heat exchanger in fluid connection with said reservoir of liquid gallium; and

5 means for circulating said liquid gallium between said reservoir of liquid gallium, said  
6 heat exchanger and said ~~modulator/reflector assembly~~ accelerator based neutron source.

1 7. (Original) The neutron source assembly of claim 6, wherein said means for circulating  
2 comprises a pump.

1 8. (Currently Amended) A liquid cooling system for a neutron source assembly, said  
2 cooling system comprising:

3 a reservoir of liquid gallium;

4 a heat exchanger in fluid connection with said reservoir of liquid gallium;

5 a nozzle to provide a concentrated flow of liquid gallium in a direction normal to a non-  
6 bombarded surface of a low Z target material within the neutron source assembly; and

7 means for circulating said liquid gallium between said reservoir of liquid gallium, said  
8 heat exchanger and the neutron source assembly to remove heat from a neutron generating low Z  
9 target ~~low Z~~ material within the neutron source assembly.